Exploring New Forms in the Visual Arts Through the Use of Electronic Tools: Videography and Computer Graphics

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Abstract—The author writes of her collaborative work with Alan Powell in electronic image making and processing. She discusses some of the issues raised by using new technologies in the development of experimental media work and gives a brief history of how she and Powell deal with the new tools, in terms both of gaining access to them and of developing an aesthetic based on their use. She illustrates her points by describing a number of their video works and, in a concluding statement, summarizes their guiding philosophy.
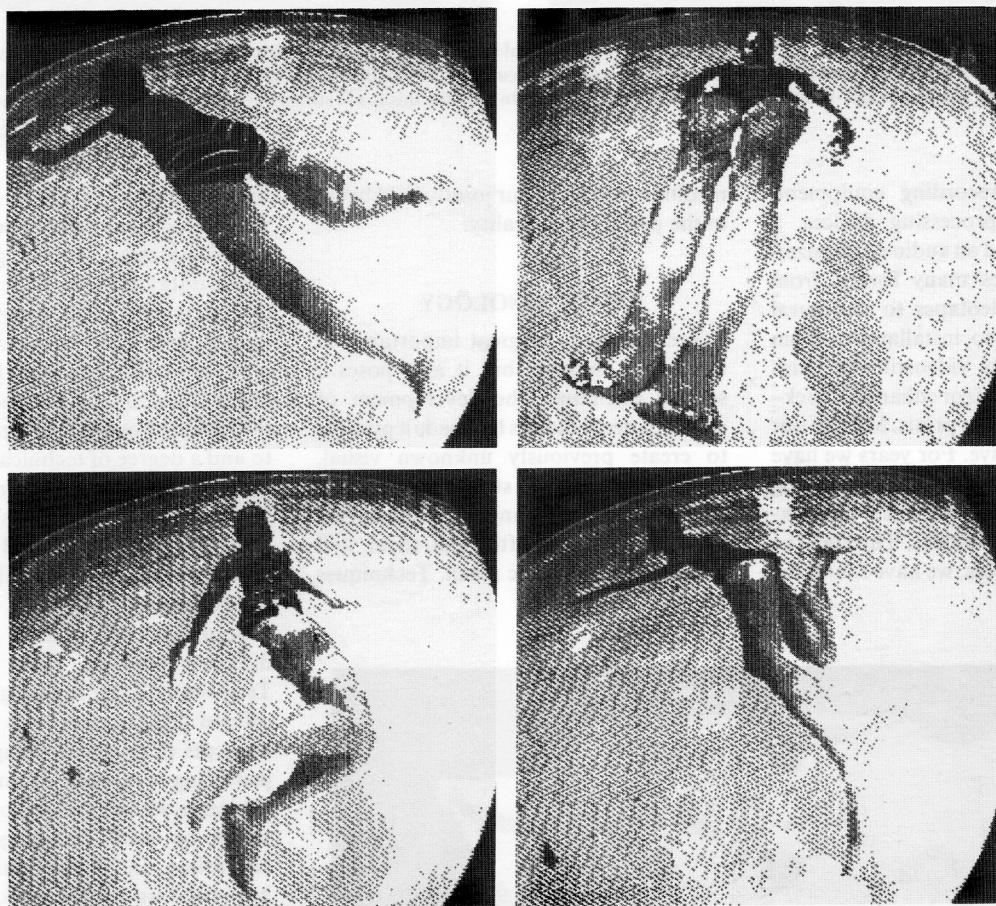
Fig. 1. *Untitled*, series of black–and–white dot–matrix computer prints on paper, 3 × 13½ in, 1986. These prints have been extracted from a ½ inch VHS color videotape. Individual video frames were stored in a frame buffer, and software was used to translate the pixel information into graphic form for printing. In making the original videotape, a wide–angle lens was used and exploited by the performer (Coleman) and the camera operator (Powell).

I. INTRODUCTION

In our videotape *Renovations: Getting On* (6 minutes, 1981), my collaborator Alan Powell speaks the closing line: "We are two artists sharing the same paintbrush." He is speaking metaphorically to describe our collaboration, but his words are also quite literally true. The paintbrush, however, is the stylus connected to a graphics computer or the joystick controlling a video switcher. We are electronic image makers and ours is a

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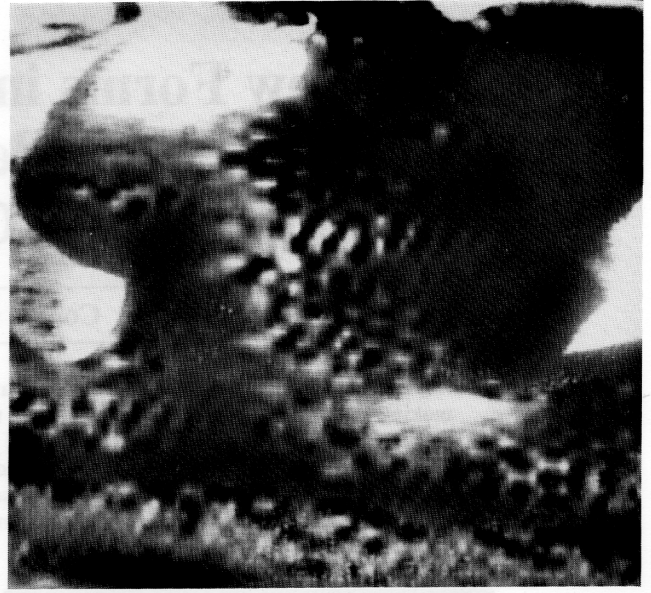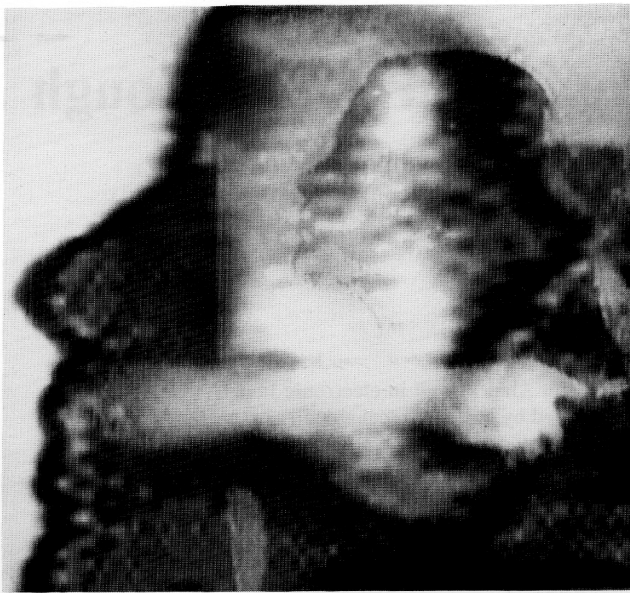
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Fig. 2. Videostills from the tape *Saturday Night*, color videotape with original soundtrack, 4 minutes, 1982. (a) shows the superimposition of one frame of video on top of itself after it has been greatly expanded with the Quantel Squeeze Zoom. (b) illustrates the graphic textural quality achieved through using extreme magnification. The black–and–white squares are individual pixels. On the tape this is not stilled but expands in real time, controlled by computer.

studio of video–recording equipment, electronic signal–processing devices, a microcomputer and an audio synthesizer. Our artwork takes many forms: from single–channel videotapes to sculptural multi–channel video installations; from photographic color videostills to computer–generated and/or enhanced black–and–white dot–matrix prints. Most of our work is collaborative. For years we have been sharing responses to life, comparing interpretations of experience and exchanging images and ideas. Through the use of electronic tools, we have found the medium to express our jointly held belief in the pluralism of reality.

II. TECHNOLOGY

Technology is of great importance in our image making, but it also poses a serious dilemma. The development of electronic technologies has made it possible to create previously unknown visual, aural and rhythmic structures, but the frequent rate of change and escalating costs of the tools often put them well outside our economic reach. Techniques that took many hours to employ just a year ago can now be done with greater technical stability, with far greater control and in only a fraction of the former time. I am referring to such innovations as the image paint systems for video graphics and the animation and digital storage capabilities for images and sound. The difficulty for us is in having regular access to and a degree of technical literacy with these tools while maintaining our conceptual focus and identities as artists. For years we have straddled the barriers between commercial facilities, academic institutions and language.

Solutions have come from several different sources. The Experimental Television Center in Owego, New York, offered artists residencies to work with concepts of electronic image processing, providing a number of analog–imaging devices as well as a microcomputer which serves as both image generator and controller. In Philadelphia, where we have lived since 1978, we found an active industrial video market which provided freelance employment and the opportunity to work with state–of–the–art broadcast tools. Artist residencies at the now–defunct SYNAPSE Video Center of Syracuse University and the Artists Television Workshop of WXXI-TV 21 in Rochester, New York, provided additional experience with broadcast post–production facilities. Each facility offered unique equipment and also quite divergent points of view. Our involvement with each contributed to the formation of a personal approach to videography and electronic imaging and the subsequent
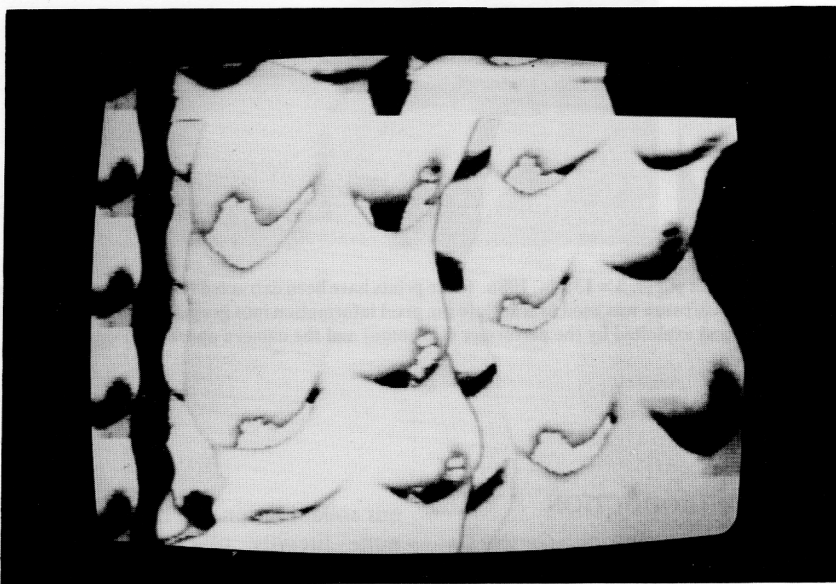

Fig. 3. Videostill from the tape *Radiation Therapy*, color videotape with original soundtrack, 15 minutes, 1983. A computer–constructed series of electronic totem poles, made up of female breasts, illustrates a 'wobbulated' image.

design of our own studio.

Our amalgamation of 'low tech' and 'high tech' was born of necessity and we have nurtured it. Our work synthesizes ½ inch VHS, ¾ inch and 1 inch type 'C' video formats [1]—analog techniques blend with digital graphics and animation. It is difficult to distinguish where one format ends and another begins. We modify the tools and vocabulary of television to facilitate our personal examination of social mythology.

III. PROCESS

I like to describe our electronic imaging as being reflective of poetry and painting, while still remaining firmly anchored in the practices of traditional telecommunications. We put tremendous thought into the delineation of nearly every frame of video. To be concerned with a single frame—1/30 of a second—might appear

contrary to the quick and fluid aspect of telecommunications. Digital–video technology has made it possible to gain control over single fields of video—1/60 of a second—and through using this technology in 1 inch videotape editing, we have developed an interest in the subtleties and subliminal power inherent in the single video frame. Juxtapositions of image to image, when removed from the contexts of time and linear motion, provide revelations of meaning. Consequently, we have been experimenting with serial images taken from tape or computer and realigning them to exploit new associations of pictorial relationships. This has affected all our current work but is especially evident in our photographic stills and computer prints (Fig. 1) [2]. Through this experimentation, Powell and I have discovered fresh perspectives and insights into the reading of an image and into the meaning of our personal metaphor.

IV. SINGLE-CHANNEL VIDEOTAPES

Our orientation grows from a strong foundation in the visual arts, with some differences between us. My background is in textiles, printmaking and graphics, while Powell's interests have tended more toward sculpture and electronic music. We seldom repeat a subject but will continue to use a specific technique in subsequent work if we find it enhances our theme or provokes a particular psychic response in the viewer. Often our tapes are visually dense; the accumulative effect of these rapidly changing images serves to leave a mental imprint and, though not intentionally ambiguous, this density allows for reading our work in multiple ways. We seek out the real and the ridiculous, often using humor for punctuation. The erotic is also a strong underlying element, directly exploited in our tape *Hot Pink* (3.5 minutes, 1981).
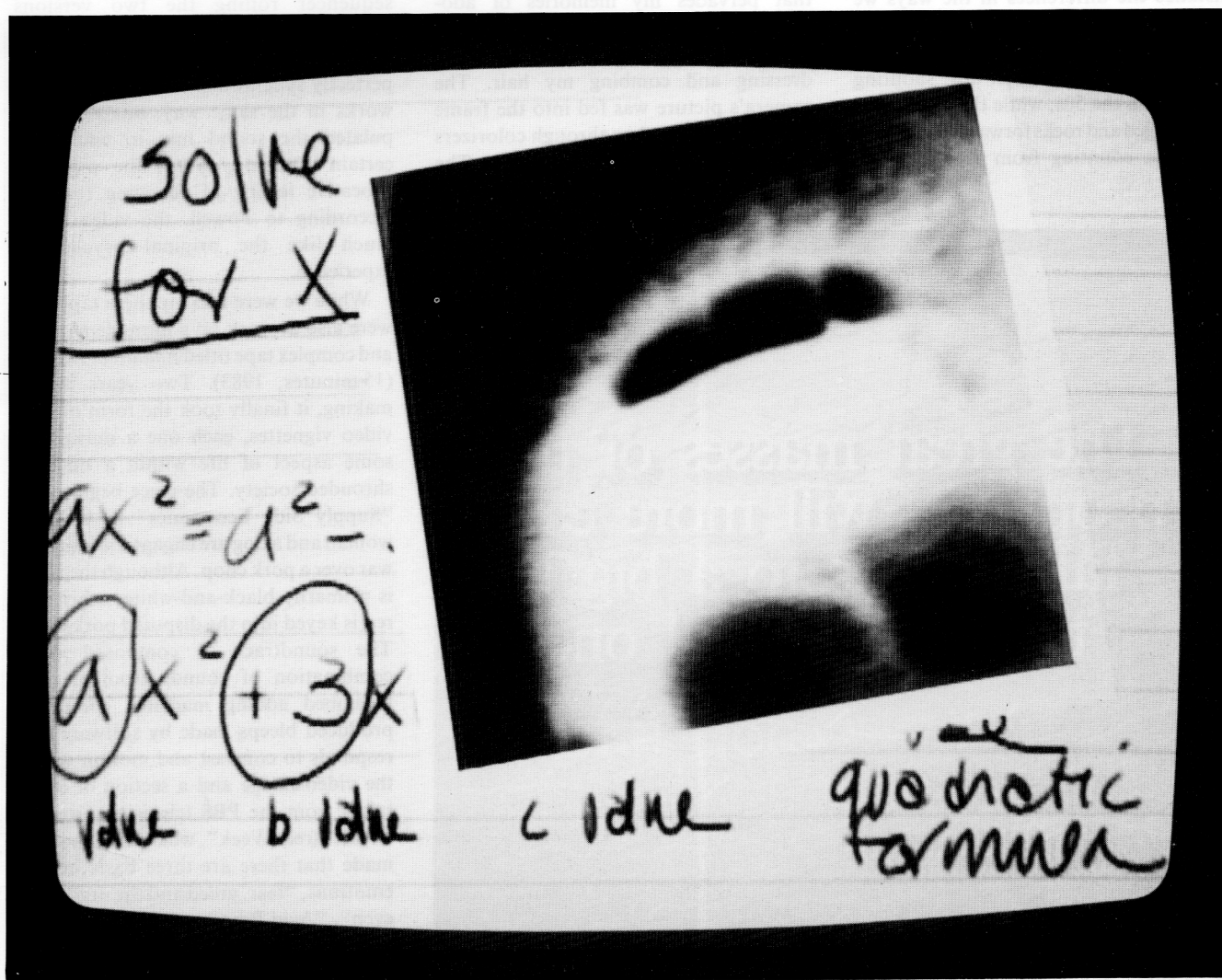

Fig. 4. Videostill from the tape *Algebra and Other Menstrual Confusions*, color videotape with original soundtrack, 7.5 minutes, 1984. This is one of a series of still frames that were drawn electronically with the Quantel Paintbox Computer System. The background is yellow with blue lines and the writing differs in each frame. The snapshot inset was created from old photographs loaded into the computer via video camera, but in this instance the snapshot is actually a secondary video source of a screaming mouth which expands to fill the entire screen.

The viewer wonders what he or she is actually seeing in this playfully erotic sequence of lips, fingers and tongues. By using oscillators to trigger switching between the actions of male and female mouths, etc., we produced effects which heighten the viewer's imagination and anticipation. In the final edit, we used speed control to slowly increase the pace of the imaging. The soundtrack, which was made separately, drives colorizers, which paint a wash of hot pinks and oranges over the original black-and-white video image. The final result is an unexpected mixture of highly processed, fast-paced images with an organic quality. *Hot Pink* marked both an end and a beginning for us in that it was our last tape that was to remain completely uninfluenced by digital tools.

Weightless (3 minutes, 1981), our first computer–influenced piece, was made with a black-and-white frame buffer. We were interested in exploring the contrast between male and female rhythm, in this instance the differences in the ways we perform calisthenic exercises before the camera. In this piece, the male lunges his body in push-ups and sit-ups, shouting numbers in the 50s, while the female sits cross-legged and rocks forward, backward, sideways, counting from 1. The frame buffer was used to hold and then release single still frames of black-and-white video while superimposing the direct camera image of the same action. Slow motion enhanced certain movements as well as the audio. The low resolution of the black-and-white digital image added a strong graphic quality, while the timing distortions provided gentle humor. The effect is somewhat like a newspaper photo come to life in distorted timing.

As a result of making *Weightless*, we had become accustomed to the look of a digital image and thus decided to elaborate on and develop it even further. In *Saturday Night* (4 minutes, 1982), we made use of another digital tool, the Quantel Squeeze Zoom. We were intrigued with this machine's ability to expand a video image by magnifying pixels. Additionally, it offered the possibility of moving around within the image after it was recorded. Our concept was to create an environment for memory, in this case to capture the peculiar feeling of ennui that pervades my memories of adolescence. Powell hand-held the camera and moved around my body as I was dressing and combing my hair. The camera's picture was fed into the frame buffer and then taken through colorizers controlled by changing oscillations. The staccato images recorded this way were then reanimated—actually choreographed—by using the squeeze zoom to move into certain sections of the tape (Fig. 2). The magnification and slow zooming create a feeling of real-time movement, while the colorization of the digital image is reminiscent of a Seurat painting. The result is highly sensuous and impressionistic, qualities further enhanced by the haunting soundtrack composed by Gareth Downs.

Through the Rabbit Hole (7 minutes, 1982) is also the re-creation of memory and a psychological experience. In this piece, a sequencer was used to alternate vertically rolling bars across the screen, switching between a pre-recorded image and a live camera image. On camera, Powell recounted the story of his 30th birthday party, which he celebrated by eating a psychotropic mushroom omelet. This pre-recorded story is then played back against another live retelling of the same tale and rerecorded with the sequencer rolling the two versions together. At times he is out of sequence with himself, while at other times he is perfectly synchronized. The audio track works in the same way, but we manipulated the sound mix to emphasize certain phrasing, giving the piece an evocative feeling of changing realities. According to Powell, the video 'feels' much like the original psychedelic experience.

While we were making these tapes, we were also at work on a more demanding and complex tape titled *Radiation Therapy* (15 minutes, 1983). Two years in the making, it finally took the form of four video vignettes, each one a musing on some aspect of life within a nuclear-shrouded society. The piece begins with "Supply Side Economics" in which a woman and a dog are engaged in a tug-of-war over a pork chop. Although the video is primarily black-and-white, a brilliant red is keyed into the disputed pork chop. The soundtrack is composed of a combination of sounds from an old-fashioned adding machine, computer-produced bleeps made by software that responds to contrast and motion within the video image and a section of audio taken from the PBS television program "Wall Street Week", where the remark is made that there are three basic human emotions, "fear, greed and the urge to get even". "Acid Rain", produced along the lines of a music video, follows. A rock song titled "My Geography" by Greg Baxter and Stephen Spera establishes the pace for wobbulating buildings, electronic totem poles made up of female breasts, a city pavement aglow with intense pulsating
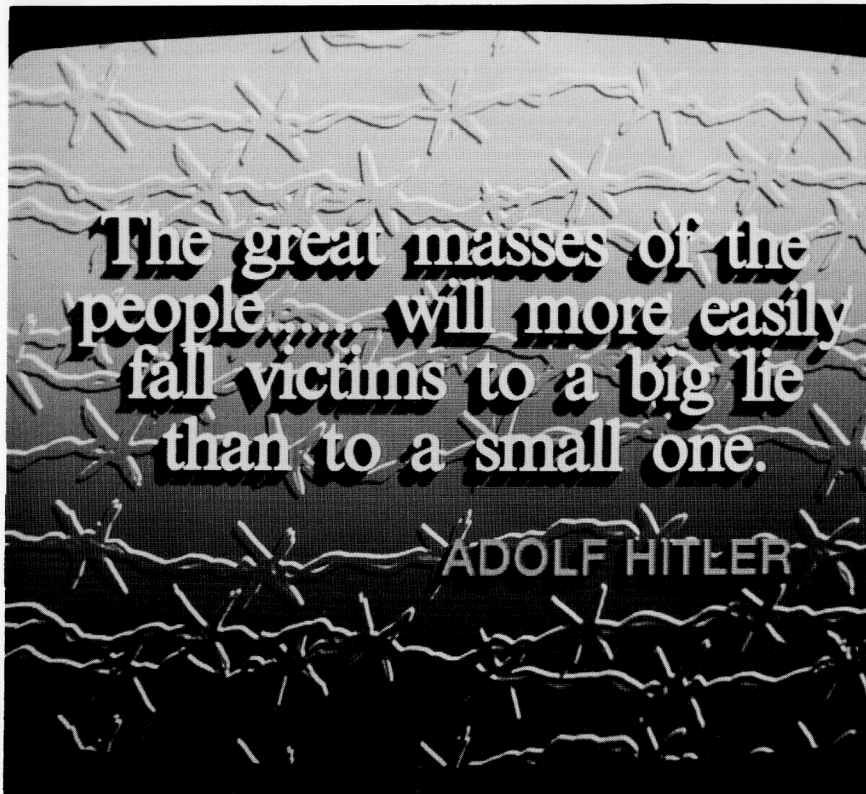

Fig. 5. Videostill from "Threats", a single–channel video installation completed in May 1985. This video frame is only one of many used in this piece that were designed and constructed completely with the Quantel Paintbox. Statements of 'threats' that normally fall outside of accepted television broadcast standards have been given a mainstream commercial TV graphic treatment, such as embossed–looking backgrounds and sculpted typography.

colors and a civic monument self-destructing by electronic dissolution (Fig. 3). This leads into "Meltdown", composed of images formed completely by synthesizing the video signal. Although we wanted to express the bizarre dichotomy in our nuclear culture—i.e. the curiosity and arrogance that tempts and seduces humankind into using technology that courts human self-annihilation—we also wanted to avoid images with a pre-established sociopolitical bias, such as the atomic bomb footage from the 1950s. So we released the video signal, exaggerated it with oscillators and colorizers and then fed this material through the ADO (Ampex Digital Optics). The video literally is stretched to the limits of the computer's ability to interpret the signal, and the image proceeds to loop back upon itself in digital feedback. The viewer is drawn into the compelling evolution of the video, swept up by exploding zigzags and throbbing avocado-like shapes. *Radiation Therapy* concludes with "Saint Vitus's Dance". Appropriated black-and-white footage from an old promotional travel film was recolored, enlarged, reversed and put into various degrees of slow motion. The 'dance' is performed by mine workers, rodeo clowns, skiers and, finally, children, depicting the remnants of the nuclear family.

The tape *Algebra and Other Menstrual Confusions* (7.5 minutes, 1984) was created in response to the technophobia suffered by many people (perhaps especially women) in Western culture. Algebraic word problems are articulated by a male voice and illustrated using images manipulated with a myriad of image processing tools [3]. As a response to each problem, an electronically drawn yellow note page appears, inset with photos from my adolescence (Fig. 4); at the same time, my voice recalls memories of high school and how I became aware of my budding sensuality. The man's patronizing reading of the math problems represents his mechanistic approach to control of the physical world. This is set in extreme opposition to a young woman's developing awareness of nature's power. The conclusions are left for the viewer to draw.

V. INSTALLATIONS

In exhibiting single-channel tapes, there are always inherent limitations: for example, the linear and sequential character of tape and the undetermined nature of exhibition spaces, which run the gamut from formal museum settings and disco's super projectors to the casual informality of a living room. With video installations, we can present physical surroundings in which the monitor and video image work as sculptural metaphor. The environment can extend the context of a work, allowing it to take on a much broader meaning while engaging the viewer as an active participant in the work.

We have been working for some time on an installation series titled *Negotiations for a Heaven on Earth*. When completed, it will have three parts, each self-contained but directly relating to the others. Each uses the television as a delivery medium which influences awareness and subliminally dictates ideals of happiness, success, sanctity and power. The viewer will be invited to stroll through the settings, interacting at will with any or all of the modules.

One part, "Threats", completed in May 1985, presents a comfortable living room complete with easy chair, ottoman, cheerful wallpaper, paintings and television set. Viewers are invited to sit down, put up their feet and watch 10 minutes of psychological intimidation and physical violence culled from TV news programs, prime-time shows, soap operas and real life (Fig. 5). Our premise suggests that not even in the sanctity of the home (a heaven, if you will) can one escape the conflicts, intimidations and threats of the world outside. Television has become a window that intertwines life and fiction to such a degree that it is difficult to distinguish one from the other. Perhaps even more alarming is the fact that we have come to accept its levels of violent behavior as normal.

The next part, "Desires", will premier in September 1987 and is a two-channel video installation. One channel plays a tape montage of TV evangelists preaching fundamentalist doctrine. This plays simultaneously against the second channel, which is also a montage, but this one mocks commercial television's theatrical presentation of sexual role models as evidenced by wrestling matches, football games, soap operas and beauty pageants.

In the third part, "Promises", the audience is invited to be seated in metal folding chairs placed in front of a speaker's podium. At head level behind the podium is a 19-inch TV monitor. On the screen a man is speaking—at once a cleric, a politician, a corporate sales manager. The message is clear: he has the answers, he alone knows the truth. Does it matter that the audience has difficulty deciding which persona is speaking?

VI. CONCLUSION

In the early 1970s, writer Elizabeth Janeway made the following observations concerning the role of the artist:

> There is no turning back. The movements to revive old skills and to live according to old work patterns are exercises in nostalgia. Certainly we want to preserve the human knowledge of past technologies and processes; I think they had great value, particularly the value of teaching slow workings of process and of close relationships with other humans, with animals, with the natural world. But we can no longer *live* by them, except in privileged enclaves. The artists who today are confronting the age of mechanical man are closer to the truth than those—artists or not—who are retreating into past truths. The machine can't be dropped out, nor can we go on as we are, divided. The huge and challenging task for art today is to humanize the machine. We have to leap off the place we stand now, catch at the spiky monstrosities spawned by technology and learn how to integrate them into a human world, how to make them not only useful but truly expressive of meaning. They are not functional until they become so [4].

I recently came upon this passage and was impressed by how relevant Janeway's words continue to be. We have moved from the Mechanical Age into a Post–Industrial Information Age; yet with all the electronic networks that are intended to bring us closer together, we appear to be even more isolated, to be still divided. Powell and I have chosen to work with the technology, to use it to communicate the human condition. We seek to understand our differences and the forces that keep us divided.

REFERENCES AND NOTES

1. One-inch type 'C' is the current U.S. standard for broadcast–quality video production; ½ inch VHS is considered an inexpensive consumer format, while ¾ inch U matic has been for some time the accepted standard for industrial production and art video.

2. The software used to translate the pixel information into graphic form for printing was written by David Jones of the Experimental Television Center, Owego, NY.

3. This videotape is included in Deirdre Boyle, *Video Classics* (Arizona: Oryx Press, 1986) pp. 4–5. For another review of *Algebra*, see Deirdre Boyle, "Video Playback: Men and Women on Tape", *Sightlines* **19**, No. 2, 5 (Winter 1985/86).

4. Elizabeth Janeway, *Between Myth and Morning: Women Awakening* (New York: William Morrow & Co., 1974) pp. 165–166.

GLOSSARY

colorizer—an electronic device that adds color to the grey scale of a black-and-white video image.

frame buffers—though they come in many forms, frame buffers are basically blocks of memory within a computer that is assigned to the function of capturing and storing single frames of video.

key—an electronic device that can distinguish individual areas of grey within a video image and allow for another source, such as a color or a different video picture, to be placed within the selected grey area.

oscillator—an electronic device that generates a basic wave form that, in this case, is used as a control voltage. It is used to control or alter some parameter of the video or audio electronic signal.

pixel—the smallest individual picture element displayed on a video monitor.

sequencer—an automatic switcher that allows a series of audio and video signals to be routed to specific output locations in a programmable time sequence.

wobbulating—a term describing the unique swaying motion produced on the screen when an electromagnet is wrapped around a television picture tube. The character of the wobbulation is controllable by manipulating the voltages.